

REMARKS

Claims 1-52 are pending in this application. Claims 19-34 and 47-50 are allowed. Claims 1-18, 35-46, 51 and 52 are rejected. Claims 1 and 11-13 are amended hereby. Claim 6 is canceled hereby.

Responsive to the rejection of claims 1-13 and 41-42 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,985,073 (Kimura et al.), Applicants have amended claims 1 and 11, and submit that claims 1-13 and 41-42 are in condition for allowance.

Kimura et al. '073 disclose a carbon fiber reinforced plastic composite material 2a (Fig. 2) laid up on the outer surface 1a of forming mandrel 1 (column 5, lines 14-16). The method of manufacturing a thick-walled cylindrical part by composite material is disclosed which, in order to reduce the internal stress generated in the fiber reinforced plastic composite material layer after heat curing, when the major material of the thick-walled cylindrical part is a carbon fiber reinforced plastic composite material, a cushioning material (e.g., glass or aramide fiber reinforced plastic composite material) having an elastic modulus smaller than that of the carbon fiber reinforced composite material is laminated separately about several to 20% being divided into several layers in the wall thickness direction (column 3, lines 51-62). By these lamination layers, it is possible to reduce the internal stress generated in each layer and thereby to eliminate the interlayer separation caused after heat curing of the cylindrical part (column 3, lines 62-65). Layer orientations of 10° to 85° are disclosed (Fig. 7).

In contrast, claim 1, as amended, recites in part: "wherein said fiber-reinforced plastic includes at least one fiber layer selected to provide a coefficient of thermal expansion for said fiber-reinforced plastic smaller than a coefficient of thermal expansion for steel at about 300° C.".

(Emphasis added.) Applicants submit that such an invention is neither taught, disclosed nor

suggested by Kimura et al. '073 or any of the other cited references, alone or in combination, and has distinct advantages thereover.

Kimura et al. '073 disclose a carbon fiber reinforced plastic composite material laid up on the outer surface of a forming mandrel where the method of manufacturing a thick-walled cylindrical part by a composite material is disclosed which, in order to reduce the internal stress generated in the fiber reinforced plastic composite material layer after heat curing, when the major material of the thick-walled cylindrical part is a carbon fiber reinforced plastic composite material, a cushioning material (e.g., glass or aramide fiber reinforced plastic composite material) having an elastic modulus smaller than that of the carbon fiber reinforced composite material is laminated separately into several layers. Kimura et al. '073 fail to disclose or suggest that the fiber-reinforced plastic includes at least one fiber layer selected to provide a coefficient of thermal expansion for the fiber-reinforced plastic smaller than a coefficient of thermal expansion for steel, and further, fails to disclose or suggest that the fiber layer is selected to provide a coefficient of thermal expansion for the fiber-reinforced plastic smaller than a coefficient of thermal expansion for steel at about 300° C. To anticipate a claim, the reference must teach every element of the claim (MPEP 2131), and as Kimura et al. '073 fails to disclose at least these elements, Kimura et al. '073 does not anticipate claim 1, as amended. Further, as the coefficient of thermal expansion is a function of the temperature of the material, and is known to vary widely with temperature, it is not obvious to one of ordinary skill in the art to provide a fiber-reinforced plastic which includes at least one fiber layer selected to provide a coefficient of thermal expansion for said fiber-reinforced plastic smaller than a coefficient of thermal expansion for steel at about 300° C.

In further contrast, claim 11, as amended, recites in part: "said throughflow cylinder being comprised of fiber-reinforced plastic including at least one of aramide fibers and carbon fibers,

wherein said fiber-reinforced plastic includes a plurality of fibers, greater than approximately 30% of said plurality of fibers are substantially oriented in a peripheral direction.”. (Emphasis added.)

Applicants submit that such an invention is neither taught, disclosed nor suggested by Kimura et al. ‘073 or any of the other cited references, alone or in combination, and has distinct advantages thereover.

Kimura et al. ‘073 disclose a carbon fiber reinforced plastic composite material laid up on the outer surface of a forming mandrel where the method of manufacturing a thick-walled cylindrical part by a composite material is disclosed which, in order to reduce the internal stress generated in the fiber reinforced plastic composite material layer after heat curing, when the major material of the thick-walled cylindrical part is a carbon fiber reinforced plastic composite material, a cushioning material (e.g., glass or aramide fiber reinforced plastic composite material) having an elastic modulus smaller than that of the carbon fiber reinforced composite material is laminated separately into several layers. Kimura et al. ‘073 fail to disclose or suggest that greater than approximately 30% of the plurality of fibers are substantially oriented in a peripheral direction. To anticipate a claim, the reference must teach every element of the claim (MPEP 2131), and as Kimura et al. ‘073 fails to disclose at least these elements, Kimura et al. ‘073 does not anticipate nor make obvious claim 11, as amended.

Advantages of the present invention is a throughflow cylinder which is more resistant to high temperatures and thermal shock while at the same time being more cost effective to manufacture.

For all of the foregoing reasons, Applicants submit that claims 1 and 11, and claims 2-10, 12, 13 and 41-42 depending therefrom, are in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 14-16 under 35 U.S.C. § 103(a) as being obvious by U.S. Patent No. 5,985,073 (Kimura et al.), Applicants have amended claim 1 as discussed above, and submit that the amendment to claim 1 distinguishes claim 1 and dependent claims, including claims 14-16, from the cited art including Kimura et al. '073. For all of the foregoing reasons, Applicants submit that claim 1, and claims 14-16 depending therefrom, are in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 1-18, 35-46, 51 and 52 under 35 U.S.C. § 103(a) as being obvious by U.S. Patent No. 3,139,375 (Bryand) in view of U.S. Patent No. 5,985,073 (Kimura et al.), Applicants have amended claims 1 and 11 as discussed above, and submit that the amendments to claims 1 and 11 distinguish claim 1 and 11, and dependent claims, including claims 2-10, 12, 13-18, 35-46, 51 and 52, from the cited art including Bryand '375 and Kimura et al. '073. For all of the foregoing reasons, Applicants submit that claims 1 and 11, and claims 2-10, 12, 13-18, 35-46, 51 and 52 depending therefrom, are in condition for allowance, which is hereby respectfully requested.

At page 3 of the Office Action claims 19-34 and 47-50 are indicated, for which courtesy the Examiner is thanked. For all of the foregoing reasons, Applicants submit that claims 19-34 and 47-50 are in condition for allowance, which is hereby respectfully requested.

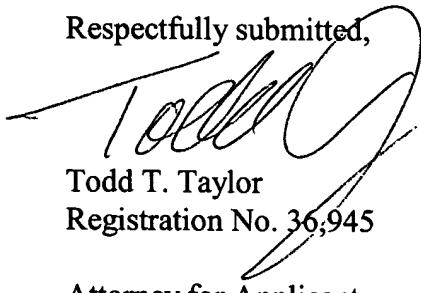
It is further submitted that the requested amendments to the claims, submitted after the Office Action designated as Final, should be entered, in that the amendment will place all remaining claims in condition for allowance. Further, the requested amendments to the claims simplify the issues for a potential appeal by reducing the number of claims under consideration and clarifying the claimed structure.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,



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CERTIFICATE OF MAILING

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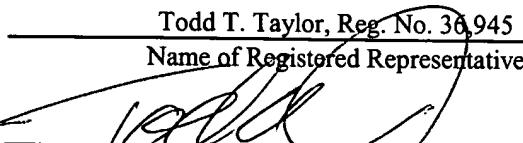
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on: February 1, 2006.

Todd T. Taylor, Reg. No. 36,945

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Date